HYDRA
In-Production Inspection

Quality inspection and production processes in one system!
MOTIVATION
Quality Assurance requirements have consistently increased over the years. Not only do these requirements ensure that products are manufactured at a specific quality grade but they also are there to permanently monitor and improve process quality. Many companies still treat quality assurance as a separate process, which they keep isolated from production management, thereby ensuring data is kept redundantly in multiple systems. However, CAQ (Computer Aided Quality Assurance) functions offer many options that are embedded directly in the MES.

HYDRA collects in-production inspection (FEP) results which show failures in processes at an early stage. This inspection enables an employee to perform root cause analyses and then take measures to mitigate the failures before it’s too late. After implementation, the outcome can be evaluated, which typically leads to a reduction in scrap which itself leads to a reduction in costs.
State-of-the-art quality assurance with MES

Here are some of the MES functions that are relevant to Quality Assurance which includes planning, data collection and evaluations:

- Planning production inspection
- Flexible definition of characteristics (e.g. variables, attributes, visual defect recordings, inspection charts, random samples)
- Due dates in intervals based on time, quantity and event
- Inspection data can intuitively be collected directly at the BDE terminal or at designated inspection stations
- Automatic transfer of measured values from digital measuring equipment
- Using continuous data streams (e.g. from the collection of process data)
- Connection of complex measuring equipment
- Context related inspection information at the shop floor terminal
- Detailed evaluations, diagrams, control charts and reports
- Creating inspection certificates
- Functions for goods issue and initial sample inspection
- Comprehensive control plan to fulfill QS 9000 and TS 16949 requirements
- Collection of inspection data and failure monitoring on mobile devices
Seamless integration of production and quality inspection

Integration of in-production inspections (FEP) into the network with other MES applications, can offer many benefits, such as saving both time and costs while in production:

- Inspection plans and characteristics focus on the production process (e.g. linking production order in the MES application “Shop floor data”)
- Automatic monitoring of defined due dates for inspection events using collected machine data (e.g. quantity, machine status, production time)
- Using automatically collected process values for quality inspection
- Order, quality, machine and tool data is cross-referenced (e.g. inspection relating to cavities)
- Uniform operation functions for orders, quality and machine data at shop floor terminals that are in production
- Linking a quality inspection with the control of material flow (e.g. when material is blocked in the event that it failed)
Focus on quality

Several evaluations, diagrams and reports create transparency which is highly valued by machine operators and QA managers alike. Some examples include:

- Configurable control charts (e.g. XQuer charts, p-charts, single value charts, R-charts, S-charts, Median charts, and histograms)
- Failure mode analysis using Pivot functions
- Machine, order, article, lot and inspection points relating to evaluations
- Statistical evaluations of individual cavities for multi cavity molds (e.g. injection molding)
- Control charts at the shop floor terminal
- Data export for common statistical programs (e.g. qs-STAT®)
To comply with quality requirements

No other specialist area comprises of more standards, manuals and rules than Quality Assurance. In order to comply with these requirements, HYDRA FEP offers a number of options for configuration, customization and management of master data:

- Individual definition of characteristics including tolerance and action and limits and plausibility clauses
- Specifying any failure types, location and causes
- Requirements for measures
- Creating inspection plans relating to articles and article groups
- Configurable characteristics that calculate their own values
- Direct assignment of inspection steps for operations
- Specifying intervals or events for due dates regarding inspections after production, a certain number of cycles or status changes, etc.
- Flexible configuration of inspection procedures with the option to design a dialog
- Configurable workflow to collect quality data from failures and measures
- Creating inspection points by event due with automatic generation of inspection decisions
- Using HYDRA FEP to simply collect data as a QM subsystem
- Transferable master data collected from superior systems (e. g. SAP QM)
- Flexible configuration of control charts which includes monitoring functions such as trend, run, middleThird, etc.
- Creating individual inspection certificates on the basis of MS Office templates
Every MES solution is as individual as the company using it. An MES must be of a modular design and largely configurable in order to turn field-tested standard functions into tailor-made solutions.

Extensive requirements covering all business sectors and levels must be considered: From user-friendly collection and information functions for operators to reliable statistics for the management.

The examples for HYDRA FEP applications illustrated in this brochure are a combination of standard MES products by MPDV. These products, characterizing a state-of-the-art MES, can be selected needs-based and integrated without interfaces:

- **Shop Floor Integration Services**: Interfaces to machines and production lines plus data collection and information functions for operators
- **MES Applications**: Powerful programs to process data and functions for data maintenance, detailed planning, monitoring and controlling
- **Smart MES Applications**: For usage on mobile devices and in web browsers
- **MES-Cockpit Applications**: Dashboards for general KPIs
- **Enterprise Integration Services**: Basic functions and interfaces to seamlessly integrate the MES into an existing IT landscape